**An Overview of CapWIN
the IBM First Responder
Interoperability Solution in the
Washington, D.C. Region**

September 24, 2003

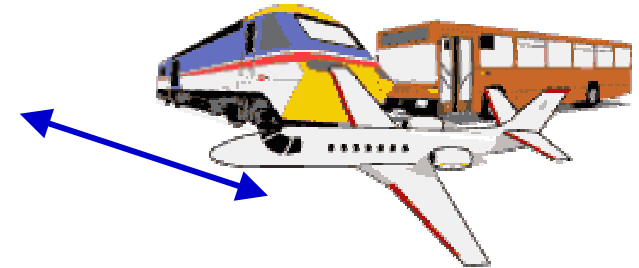# The "4 Cs": Key to Security, but a Real Challenge

Federal Government

State & Local Government

Travel & Transportation

Communication: The basic capabilities of accessing and sharing accurate and timely information required to accomplish the customer's safety and security mission.

Collaboration: The ability for multiple individuals within an organizations, and for multiple organizations, to work together to effectively process shared information and make appropriate, informed decisions.

Coordination: The capability for multiple individuals within an organizations, and for multiple organizations, to take appropriate, synchronized actions to implement the decisions taken in a collaborative environment.
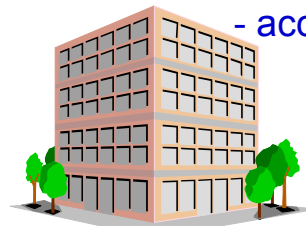
Control: The capability to control
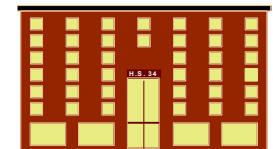- access to the U.S. borders
- access to sensitive information
- access to secure physical locations
- access to secure physical devices

Healthcare

Private Sector

Education

The First Responder Interoperability Challenge

- Effective incident management for transportation and public safety agencies requires coordination and information sharing among multiple responders.

- Incident response and scene management is hampered by the inability of agencies to communicate, particularly in a mobile environment. Fragmented and indirect communication takes time and adds unnecessary delay and risk.

- The inability to communicate is evident during major traffic incidents, and other events including school violence, major crimes, train and aircraft accidents, major fires, and major weather events.

IBM Safety & Security

The CapWIN Project

IBM

CapWIN Project Background

❑ Wireless Communications for First Responders

❑ DC, MD, VA

  ▪ $20M Total Budget

  ▪ 30+ agencies

  ▪ 10,000 users

  ▪ Multi-year Program

❑ Program Timeline

  ▪ RFI mid-2000

  ▪ RFP mid-2001

  ▪ Contract Start August 2002

  ▪ Phase One delivery Summer 2003

CAPWIN
Capital Wireless Integrated Network

Building a Bridge in Transportation and Public Safety Communications

CapWIN Program Sponsors

- U.S. Department of Justice, Office of Domestic Preparedness
- Maryland State Highway Administration
- Virginia Department of Transportation
- U.S. Department of Transportation (FHWA)
- National Institute of Justice, Office of Science and Technology
- Public Safety Wireless Network (PSWN)

The CapWIN Consortium

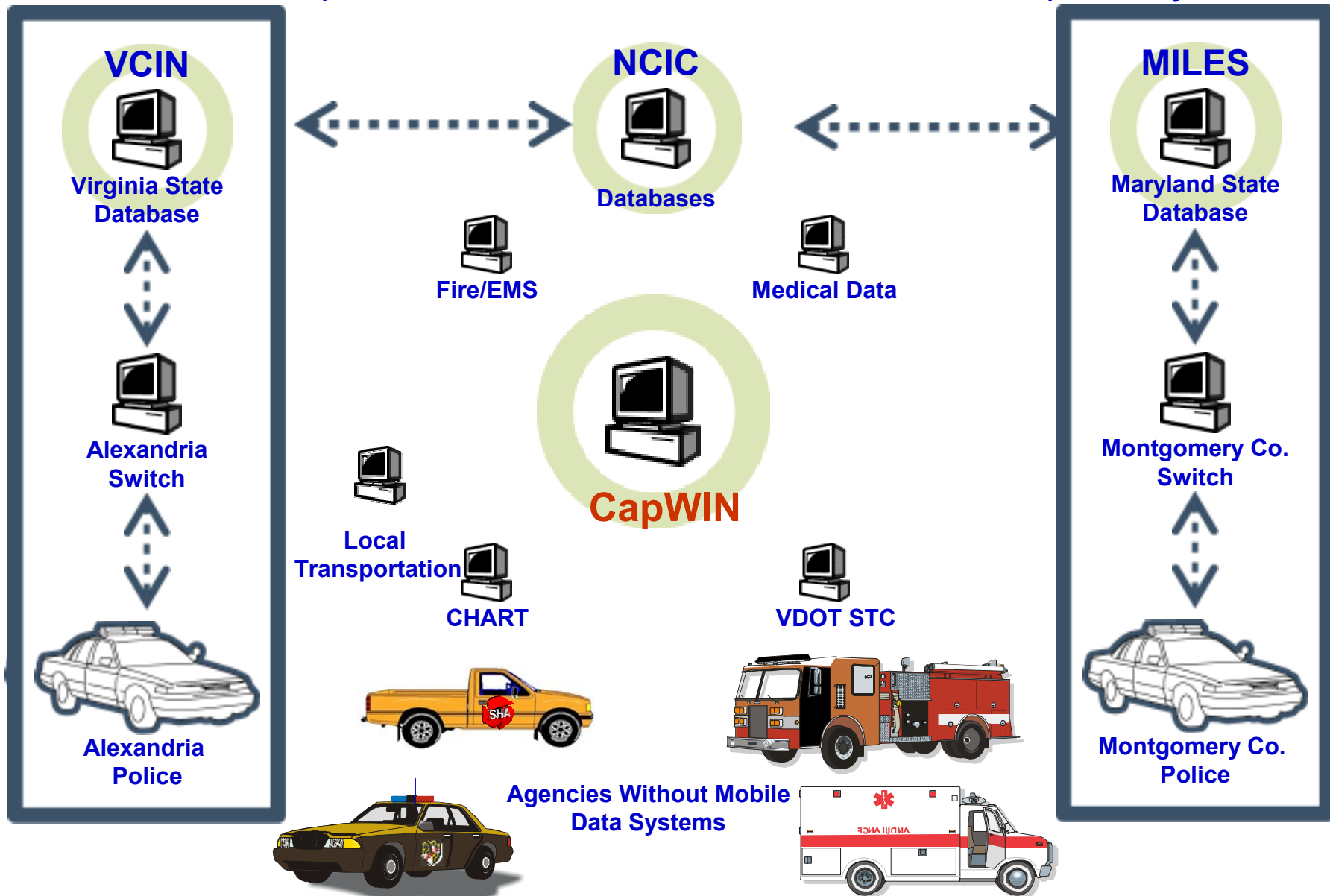| District of Columbia	Maryland	Virginia	Federal Agencies	Other Agencies
Washington Metropolitan Police	Prince George's Co. Police Department	Alexandria City Police Department	United States Park Police	International Association of Chiefs of Police
Washington Fire and EMS	Prince George's Co. Fire and EMS Department	Alexandria City Fire Department	United States Department of Justice/National Institute of Justice	International Association of Fire Chiefs
Emergency Management Agency	Montgomery Co. Department of Police	Arlington Co. Fire Department	United States Department of Transportation	National Institute for Missing Children
D.C. Public Works	Montgomery Co. Fire & Rescue Service	Arlington Co. Police Department	Public Safety Wireless Network	
Washington Metropolitan Transit Authority	Maryland State Police	Fairfax Co. Police Department	Federal Bureau of Investigation	
Metropolitan Washington Council of Governments	Maryland State Highway Administration	Fairfax Co. Fire and Rescue Service	United States Capitol Police	
	Maryland Emergency Management Agency	Virginia Department of Transportation		
	Maryland Institute for EMS Systems	Virginia State Police		
	Prince George's Co. Department of Public Works	Virginia Department of Emergency Management		
	Montgomery Co. Department of Public Works and Transportation	Virginia Emergency Medical Services		

The IBM CapWIN Solution Team

- ❑ **IBM** - Prime contractor, systems integration, program management, architecture, design, and development

- ❑ **PB Farradyne** - Intelligent Transportation Systems, design, and development

- ❑ **Pelican Mobile** - Mobile computer system installation and support

- ❑ **Telecommunications Systems Corporation** - Training, documentation, central site system installation

- ❑ **Templar Corporation** - Database access, design and development

- ❑ **Motorola –** Development of connector to existing systems.

- ❑ **Jabber** – Messaging software

Without CapWIN: Islands of communications … no interoperability

VCIN
Virginia State Database

Alexandria Switch

Alexandria Police

NCIC
Databases

Fire/EMS

Medical Data

CapWIN

Local Transportation

CHART

VDOT STC

MILES
Maryland State Database

Montgomery Co. Switch

Montgomery Co. Police

Agencies Without Mobile Data Systems
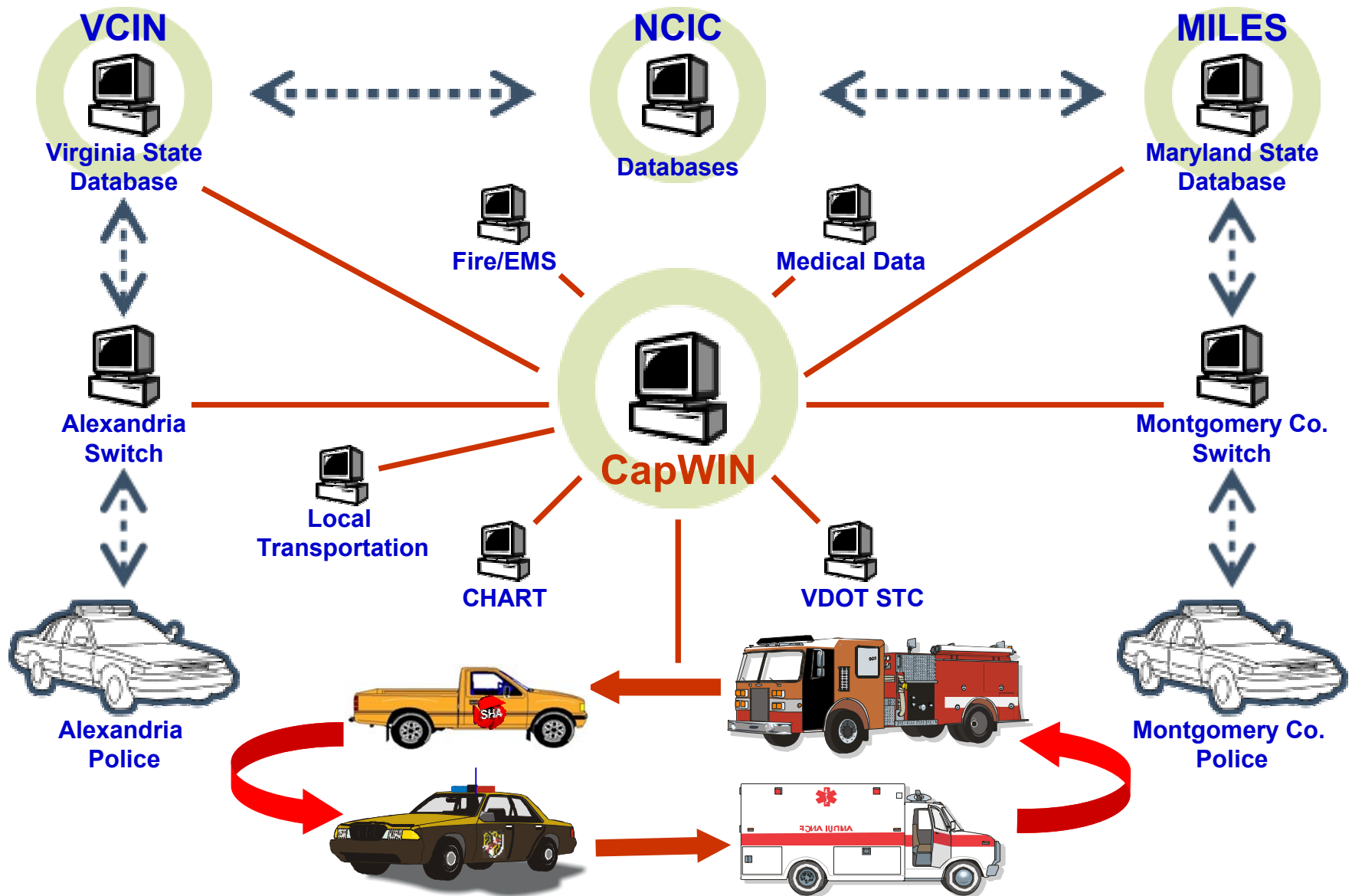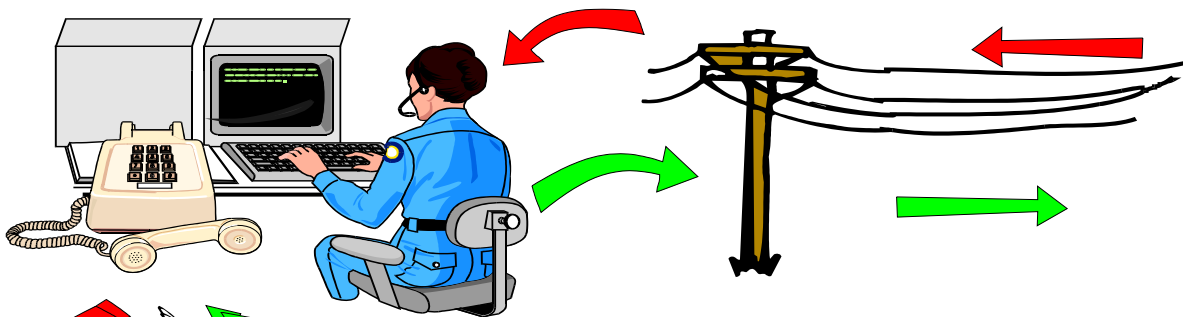
Should we have to rely on this roundabout, antiquated system of communication to protect and serve the public?

Should citizens' safety rely on such a chaotic process?

The CapWIN Project

IBM
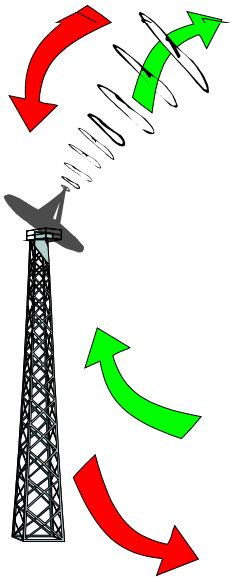
CapWIN Requirements

- Mobile Data Interoperability
  - Three Key Functions:
    - Messaging
    - Federated data source access
    - Incident Management
  - Integrate & leverage existing systems
  - Browser-based approach for agencies w/o existing systems

- Open, standards-based, modular, scalable

- COTS-based, minimum development

- High availability and security

- Low risk, low total cost of ownership

- Public and private wireless network support

CapWIN Solution Benefits

JAVA

NCIC security standards

- Minimal impact to legacy systems

SMTP

- Open, scalable, reliable Web-based architecture

SSL

XML

- Efficient use of limited bandwidth

TCP/IP

HTML

- Technology standards

2PKDP

IEEE 1512-2000

- Extensive COTS use

LDAP

HTTP

- Low Total Cost of Ownership (TCO)

RC5

- Security

WML

- Experience and past performance

NTCIP

SQL

SNMP

Solution Architecture Overview

CapWIN Central Site

Web Application Server

MQ Connector

- User Interface Logic
- WebSphere Application Server
- Application Logic

Wireless Gateway

Message Gateway

CapWIN & Local Transaction Log
- Queries
- Messages

Message Brokering Hub

Global Directory

Federated Data Access Server

- MQ
- Query Interface Mapper

CapWIN Clients

Mobile Clients
- In-Vehicle Laptop
- Mobile Laptop
- PDA

Desktop Clients

Wireless

CapWIN Connector (Agency 1)
- MQ SERIES
- Connection SW
- Existing Switch 1

Agency 1

CapWIN Connector (Agency 2)
- MQ SERIES
- Connection SW
- Existing Switch 2

Agency 2

CapWIN Connector (Agency n)
- MQ SERIES
- Connection SW
- Existing Switch n

Agency n

- WALES
- MILES
- VCIN
- MD SOC
- VA STC
- Hazmat
- Futures

Solution Architecture Overview

Web Application Server
- MQ Connector
  - User Interface Logic
  - WebSphere Application Server
  - Application Logic
- Wireless Gateway

Message Gateway
- CapWIN & Local Transaction Log
  - Queries
  - Messages
- Message Brokering Hub
- Global Directory

Federated Data Access Server
- MQ
- Query Interface Mapper

CapWIN Central Sites

Wireless Networks

Existing Mobile Systems

Agency Databases

Mobile Clients
- In-Vehicle Laptop
- Mobile Laptop
- PDA

Wireless

Desktop Client

New Wireless Devices

CapWIN Connector
- MQ SERIES
- Connection SW
- Existing Switch 1

Agency 1

CapWIN Connector
- MQ SERIES
- Connection SW
- Existing Switch 2

Agency 2

CapWIN Connector
- MQ SERIES
- Connection SW
- Existing Switch n

Agency n

- WALES
- MILES
- VCIN
- MD SOC
- VA STC
- Hazmat
- Futures

IBM Safety & Security

The CapWIN Project

IBM

The CapWIN Global Directory: Logical Context
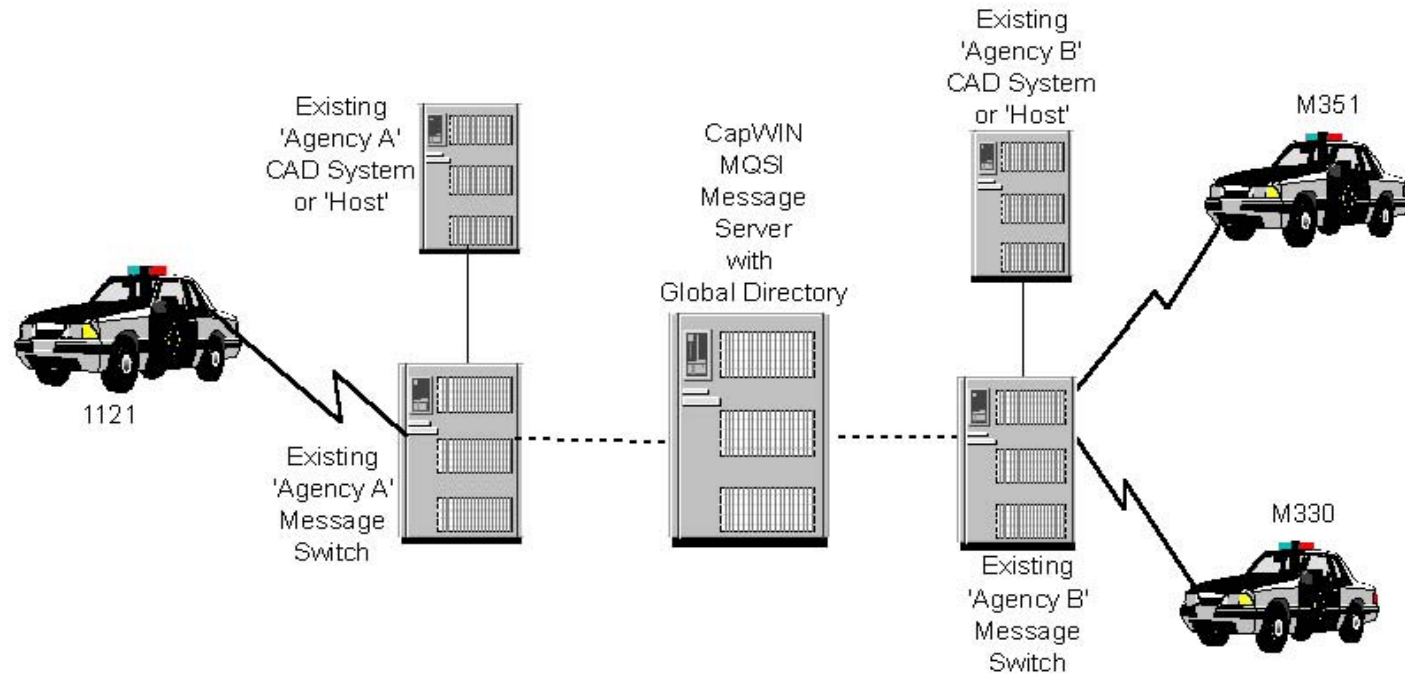
The CapWIN Global Directory: Address Translation

The CapWIN Project
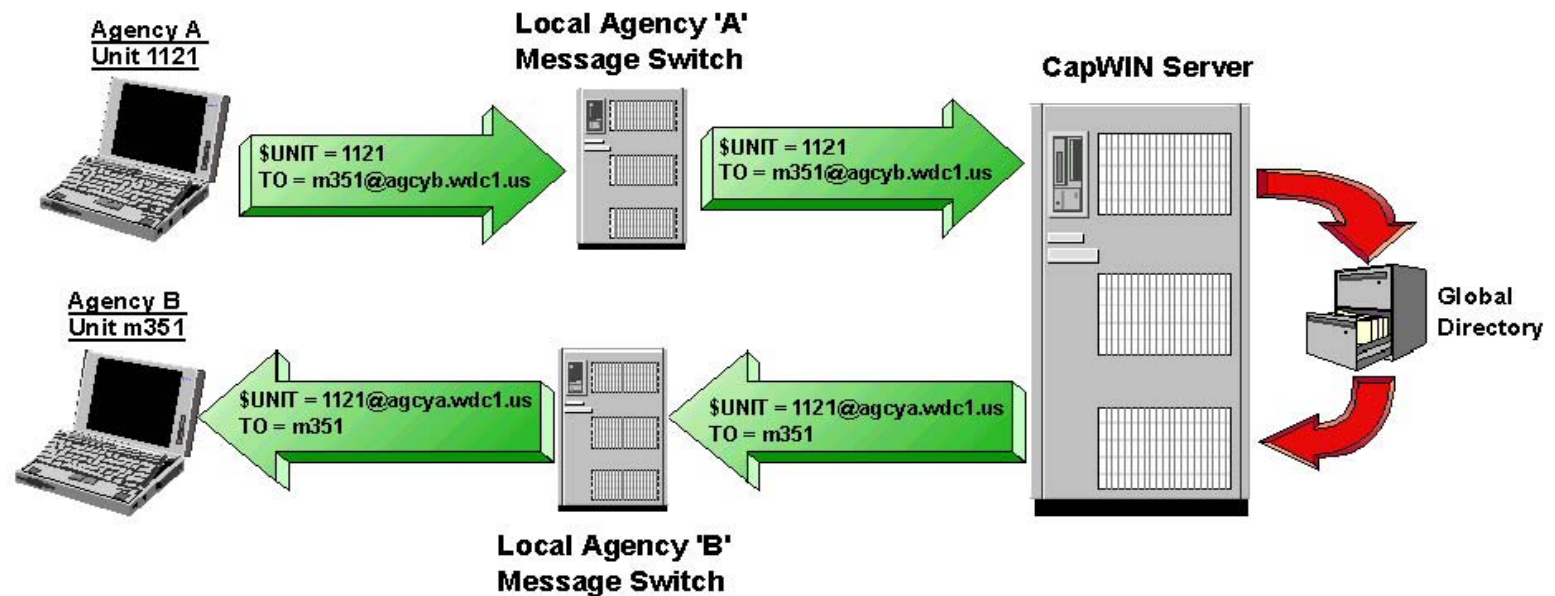
The CapWIN Global Directory
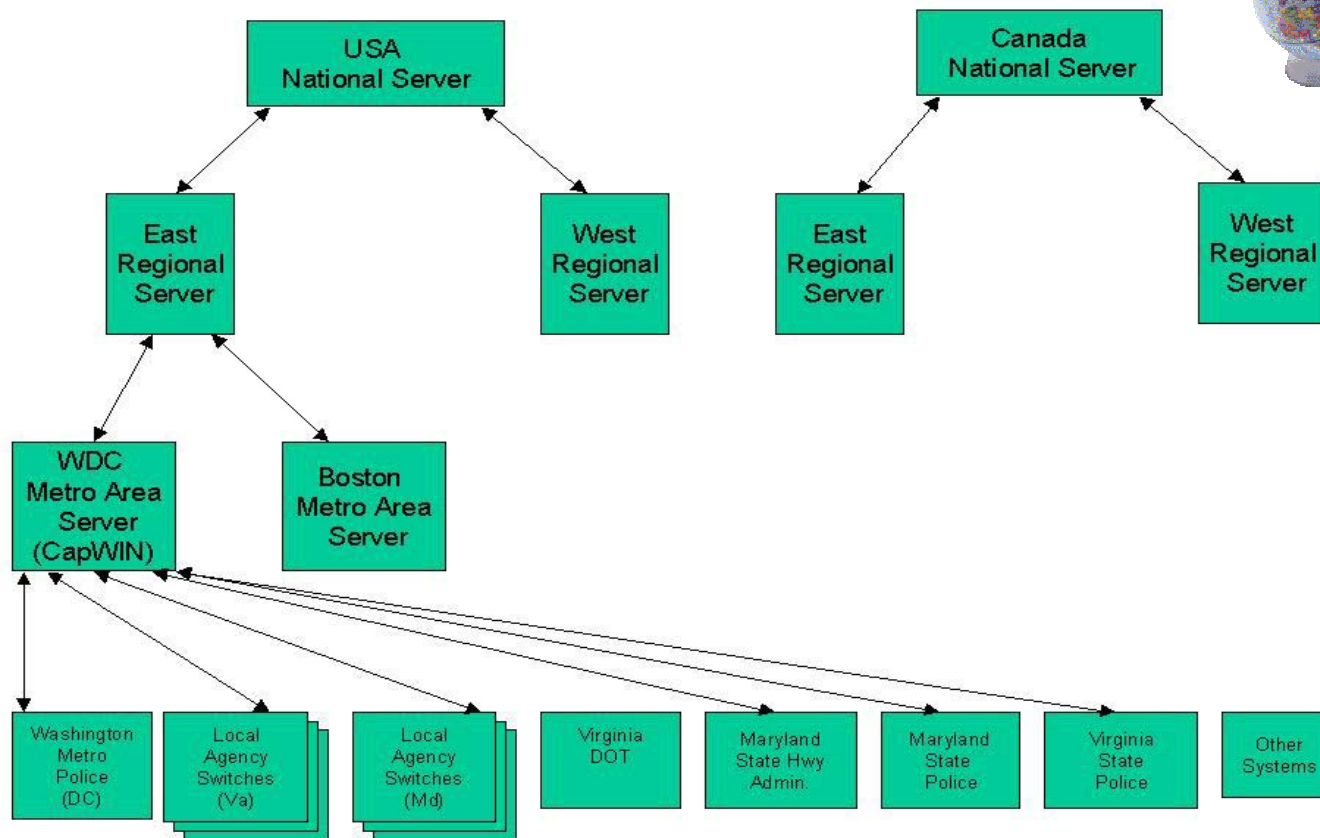
A clean break with the past

❑ **This architecture can access anyone and any data from the same point over the same infrastructure**

❑ **Tweaking old technology (patch switches, IP Trunking) will not allow:**

- Access to data from the same device
- Addressing to specific person or groups (as opposed to a "channel")
- Sophisticated features (encryption, logging, auditing, triggering automatic alert based on events, seamless integration with digital event management applications)

More Information:

ibm.com/services/security

capwin.org

John Wyatt
Senior Consulting IT Specialist
IBM Business Consulting Services
jwyatt@us.ibm.com